



DEPARTMENT OF ENERGY

Notice of Availability of Draft Waste Incidental to Reprocessing Evaluation for the Test Bed Initiative Demonstration

AGENCY: Office of Environmental Management, Department of Energy.

ACTION: Notice of availability.

SUMMARY: The U.S. Department of Energy (DOE) announces the availability of the *Draft Waste Incidental to Reprocessing Evaluation for the Test Bed Initiative Demonstration, U.S. Department of Energy* (Draft WIR Evaluation). The Draft WIR Evaluation concerns DOE's proposed Test Bed Initiative (TBI) Demonstration. Under the proposed TBI Demonstration, approximately 2,000 gallons of waste from tank SY-101 at the Hanford Site in Washington will be pretreated to remove most key radionuclides, then solidified (grouted) offsite and subsequently disposed of at a licensed and permitted disposal facility outside of the State of Washington. The Draft WIR Evaluation demonstrates that the pretreated and solidified waste will be incidental to reprocessing of spent nuclear fuel, will not be high-level radioactive waste (HLW), and may be managed as low-level radioactive waste (LLW). DOE prepared the Draft WIR Evaluation pursuant to DOE Order 435.1, *Radioactive Waste Management*, and DOE Manual 435.1-1, chg 3, *Radioactive Waste Management Manual*. DOE is consulting with the Nuclear Regulatory Commission (NRC) concerning the Draft WIR Evaluation. DOE is also making the Draft WIR Evaluation available for comments from States, Tribal Nations, stakeholders and the public. After consultation with NRC, carefully considering comments received, and performing any necessary revisions of analyses and technical documents, DOE plans to prepare a final WIR Evaluation. Based on the final WIR Evaluation, DOE may determine, in a future WIR Determination, whether the pretreated and solidified waste is incidental to reprocessing, is non-HLW, and may be managed as LLW.

DATES: DOE invites comments on the Draft WIR Evaluation during a 90-day comment period beginning November 5, 2021 and ending on February 2, 2022. DOE will consider all comments received by February 2, 2022. A public meeting on the Draft WIR Evaluation will be held on November 18, 2021. Before the meeting, DOE will issue stakeholder and media notifications and publish an additional notice in the local newspaper providing the date, time, and information concerning the public meeting.

ADDRESSES: Information on the public meeting date will be available before the meeting at the website listed in <https://www.hanford.gov/pageAction.cfm/calendar>. The Draft WIR Evaluation is available on the Internet at <https://www.hanford.gov/page.cfm/ReprocessingEvaluationforBedInitiative>. Written comments should be submitted to: Ms. Jennifer Colborn, U.S. Department of Energy, Office of River Protection, 2440 Stevens Drive, Richland, WA 99354. Alternatively, comments may also be filed electronically by e-mail to: TBIWIR@rl.gov.

FOR FURTHER INFORMATION CONTACT: For further information about this Draft WIR Evaluation, please contact Mr. Richard Valle by mail at U.S. Department of Energy, Office of River Protection, 2440 Stevens Drive, Richland, WA 99354, by phone at (509) 376-7256, or by email at richard_j_valle@orp.doe.gov.

SUPPLEMENTARY INFORMATION: DOE currently stores radioactive waste in underground tanks at the Hanford Site in the State of Washington. The waste is managed as HLW generated, in part, by the prior reprocessing of spent nuclear fuel for defense-related activities during the Manhattan Project and Cold War eras. Hanford's current mission focuses on the cleanup and remediation of those wastes and ultimate closure of the site. As part of that mission, DOE is retrieving waste from the Hanford tanks, separating the low-activity waste

(LAW) from other waste in the Hanford tanks and vitrifying (immobilizing in a glass matrix) some of the LAW. DOE has not selected a supplemental treatment method for the remaining LAW in the Hanford tanks.¹ The proposed TBI Demonstration would demonstrate a potential supplemental LAW treatment approach.²

This Draft WIR Evaluation concerns approximately 2,000 gallons of waste from Hanford tank SY-101, which, under the proposed TBI Demonstration, will be pretreated at the Hanford Site to remove most key radionuclides, then solidified (grouted) offsite and disposed of at a licensed and permitted facility outside the State of Washington. This Draft WIR Evaluation evaluates whether the pretreated and solidified waste will be incidental to reprocessing of spent nuclear fuel, will not be HLW, and may be managed as LLW under the criteria in Section II.B.(2)(a) of the U.S. Department of Energy (DOE) Manual 435.1-1, *Radioactive Waste Management Manual*. This Draft WIR Evaluation demonstrates that the criteria in DOE Manual 435.1-1 will be satisfied.

For the proposed TBI Demonstration, about 2,000 gallons of Tank SY-101 supernate (the uppermost liquid layer of the tank waste that contains low levels of insoluble, long-lived radionuclides) will be pretreated using: in-tank settling, followed by decanting, filtering, and processing through ion exchange media. The decanting (pumping without disturbing the underlying saltcake layer), filtering and ion exchange pretreatment will take place within an In Tank Pretreatment System, installed in Tank SY-101. The pretreated liquid will be transferred into totes (Type A shipping packages). Trucks will transport the shipping packages to a commercial treatment facility, either Perma-Fix Northwest in Richland, Washington, EnergySolutions, near Clive, Utah, Perma-Fix Diversified Scientific Services Inc., in Kingston,

¹ See *Record of Decision for the Final Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington*. 78 FR 75913 (Dec. 13, 2013).

² Implementation of the proposed TBI Demonstration is contingent upon completion of analysis and documentation required pursuant to the National Environmental Policy Act of 1969, as amended, 42 U.S.C. 4321, et seq. (NEPA). DOE prepared a Draft Environmental Assessment for the proposed TBI Demonstration, *Draft Environmental Assessment of the Test Bed Initiative Demonstration* (DOE/EA-2086) and provided it to the host and affected States and Indian Tribes, for a 14-day comment period, on August 17, 2021.

Tennessee, or Waste Control Specialists LLC, near Andrews, Texas. At the offsite treatment facility, the waste will be solidified in a grout matrix. DOE plans to dispose of the treated and solidified waste as mixed LLW at either the EnergySolutions disposal facility near Clive, Utah or the Waste Control Specialists Federal Waste Facility (WCS FWF), near Andrews, Texas. At this time, DOE has not selected the location of either the solidification facility or the disposal facility.

Section II.B.(2)(a) of DOE Manual 435.1-1 sets forth criteria for determining, based on an evaluation, whether waste is incidental to reprocessing, is not HLW, and may be managed as LLW. Those criteria, in relevant part, are that the wastes: “(1) have been processed, or will be processed, to remove key radionuclides to the maximum extent that is technically and economically practical; (2) will be managed to meet safety requirements comparable to the performance objectives, set out in 10 CFR part 61, subpart C, Performance Objectives; and (3) are to be managed, pursuant to DOE’s authority under the Atomic Energy Act of 1954, as amended, in accordance with the provisions in Chapter IV [of Manual 435.1-1], provided the waste will be incorporated into a solid physical form at a concentration that does not exceed the applicable concentration limits for Class C LLW, as set out in 10 CFR 61.55, Waste Classification.”

This Draft WIR Evaluation demonstrates that the criteria in Section II.B.(2)(a) of DOE Manual 435.1-1 will be met. As to the first criterion, key radionuclides will be removed to the maximum extent technically and economically practical. Pretreatment will remove approximately 98.8 % of the key radionuclides (including cesium-137 and its daughter, barium-137m) from the approximately 2,000 gallons of tank SY-101 supernate. About 1.8 curies will remain in the pretreated waste. Regarding the second criterion, the solidified waste will meet the waste acceptance criteria for the EnergySolutions disposal facility or the WCS FWF, as applicable, which will ensure that the performance objectives, including doses, will be met for LLW disposal as set forth in the *Utah Administrative Code* and the *Texas Administrative Code*

respectively, which are comparable to the NRC performance objectives at 10 CFR part 61, subpart C. With respect to the third criterion, the pretreated and grouted waste will be in a solid physical form, will be well below the concentration limits for Class C LLW, and is expected to meet concentration limits for Class A LLW.

DOE is consulting with the NRC concerning this Draft WIR Evaluation. DOE is also making this Draft WIR Evaluation available for comments by States, Tribal Nations, stakeholders and the public.

After consultation with the NRC, carefully considering comments received from States, Tribal Nations, stakeholders and the public, and performing any necessary revisions of analyses and technical documents, DOE plans to prepare a final WIR Evaluation. Based on the final WIR Evaluation, DOE may determine (in a future WIR Determination) whether the waste is incidental to reprocessing, is not HLW, and may be managed as LLW. If DOE issues a Final WIR Evaluation and WIR Determination in the future, then the pretreated LAW discharged from the tank — from which key radionuclides will have been removed to the maximum extent technically and economically practical — will be managed as LLW, subject to the analysis and commitments in the Final WIR Evaluation and WIR Determination.³

Signing Authority

This document of the Department of Energy was signed on October 29, 2021, by Mark A. Gilbertson, Associate Principal Deputy Assistant Secretary for Regulatory and Policy Affairs, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DOE Federal Register Liaison Officer has been authorized to sign and submit the document in electronic format for

³ It follows that such LLW will be appropriately stored, transported, solidified, and disposed of as LLW.

publication, as an official document of the Department of Energy. This administrative process in no way alters the legal effect of this document upon publication in the *Federal Register*.

Signed in Washington, DC, on November 2, 2021.

Treena V. Garrett,
Federal Register Liaison Officer,
U.S. Department of Energy.

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